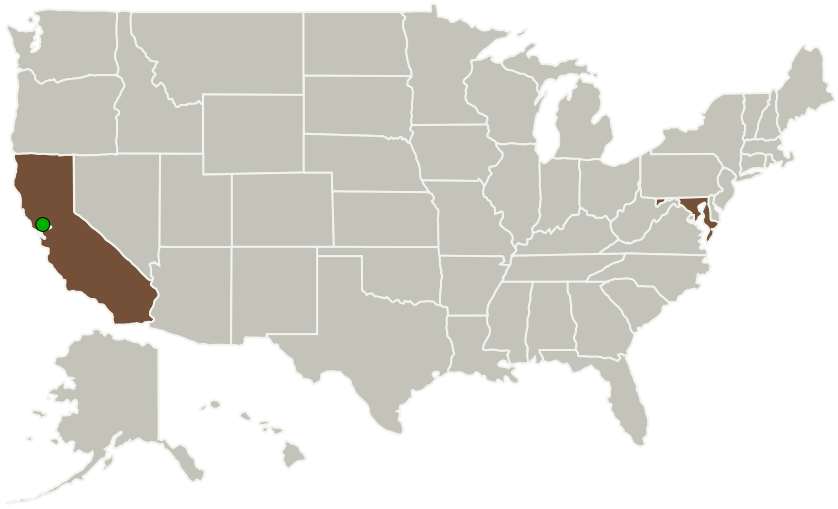
Automatic Video-based Motion Analysis, Phase II

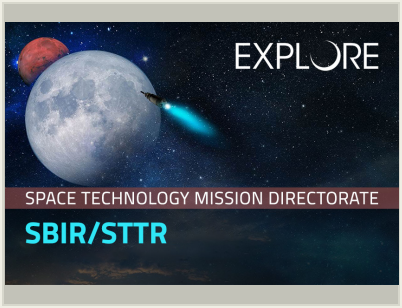
Completed Technology Project (2013 - 2015)

Project Introduction

Understanding task performance and crew behavioral health is crucial to mission success and to the optimal design, development, and operation of next-generation spacecraft. Onboard resources, like a conventional 2D video camera, can capture crew motion and interaction; however, there is a critical need for a software tool that achieves unobtrusive, non-invasive, automatic analysis of crew activity from this footage. The proposed automatic video-based motion analysis software (AVIMA) supports this R&D effort by automatically processing and analyzing complex human motions in conventional 2D video without the use of specialized markers. Unlike many video analytics solutions, AVIMA goes beyond simple blob-based video analysis by tracking the geometric configuration of human body parts like the trunk, head, and limbs. This tracking enables human motion understanding algorithms to model and recognize complex human actions and interactions. The resulting system will represent a substantial breakthrough providing benefits to an array of applications in video surveillance, human-computer interaction, human factors engineering, and robotics.

Primary U.S. Work Locations and Key Partners





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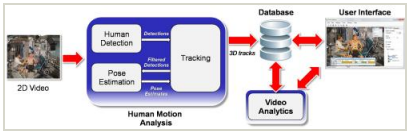
Organizations Performing Work	Role	Type	Location
Vecna Technologies, Inc.	Lead Organization	Industry Women-Owned Small Business (WOSB)	Greenbelt, Maryland
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Maryland

Images



Briefing Chart
Automatic Video-based Motion Analysis, Phase II
(https://techport.nasa.gov/image/128009)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Vecna Technologies, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

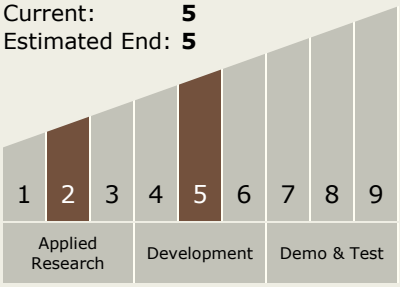
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Ashwin Thangali

Technology Maturity (TRL)

Start: **2**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.6 Human Systems Integration
    - TX06.6.1 Human Factors Engineering

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System